even when the exhaustion (shortage) occurs. Therefore, it is usual to set the lower threshold used to detect the timing of this insertion at the top position like the lower threshold TL of the first through fourth embodiments.

However, since the position where the complementary packet PP is inserted is fixed at the top position if the lower threshold is set at the top position, all that can be done is to mechanically insert the complementary packet PP when the queue length becomes zero. Therefore, consequentially, the complementary packet PP will be continuously inserted into the sequence of voice packets PO if the zero-state of the queue length continues over two or more periods of decoding unit time. This causes a marked deterioration in the quality of the decoded voice output.

In contrast, in this embodiment, the lower threshold TL1 corresponding to the lower threshold TL is set at the higher position than the top position, e.g., at the middle position of the queue length of 6 packets and the queue length of 7 packets as shown in Fig. 7.

In this case, the complementary packet PP is not inserted if the voice packet P7 shown by the dotted line in Fig. 13 is stored, but the reception of this voice packet P7 is delayed by the influence of, for example, jitter, and the queue will be made up of only the voice packets P1 to P6 if there is no storage, and, as a result, the queue length falls below the lower threshold TL1.

The queue length detector 82 monitors the relationship

between the lower threshold TL1 and the queue length by the use of a detection signal D2 corresponding to the detection signal D1, and, when it detects that the queue length has become less than the lower threshold TL1, the queue length detector 82 switches the control signal C23 supplied to the scanning reader 83 from the inactive state to the active state, and switches the control signal C2 supplied to the complementary-packet inserting device 19A from the inactive state to the active state.

The scanning reader 83 that has detected that the control signal C23 has been switched from the inactive state to the active state reads voice packets (in the figures, the voice packets P1 to P6) that constitute the queue at the time of the scanning signal SC3, and supplies the scanning signal SC3 to the complementary-packet inserting device 19A.

The complementary-packet-inserting device 19A that has received the scanning signal SC3 supplies the scanning signal SC3 to the voice presence/absence judging device 21A. Like the voice presence/absence judging device 21, the voice presence/absence judging device 21A makes a voice presence/absence judgment about the voice packets P1 to P6 that constitute the scanning signal SC3, and returns its judgment result DC3 to the complementary-packet inserting device 10A.

Based on the judgment result DC3, the complementary-packet-inserting device 19A determines the position where

the complementary packet PP is inserted. Herein, one complementary packet PP is inserted by one insertion.

When the insertion position is determined, the complementary-packet-inserting device 10A inserts the packet PP so as to disperse it as non-consecutively as possible, and controls the packet PP so as to insert it only immediately behind the interval of voice absence as much as possible.

In order to disperse and insert it, a sign (complementary-packet mark) is added to the inserted complementary packet, and, when a complementary packet is inserted the next time, the next complementary packet is inserted in such a way as not to be placed before and behind the previous complementary packet.

As a result, the voice of the decoded voice output at the interval of voice presence is prevented from being interrupted, which prevents a deterioration in the quality of the voice output that is caused when the complementary packet PP is inserted.

Generally, in a device for decoding a voice by the packet unit, a packet must be decoded at intervals of the aforementioned decoding unit time. However, according to this embodiment, a voice presence/absence judgment for voice packets that constitute a queue and the insertion of a complementary packet PP can precede the other processing. That is, since they can be processed when the load of a processor is low, the operating ratio of the processor can